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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/829,153

04/22/2004

Kazutsugu Suita

04853.0113

5731

22852 7590 06/04/2007
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EXAMINER

PECHE, JORGE O

ART UNIT

PAPER NUMBER

3661

MAIL DATE

DELIVERY MODE

06/04/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/829,153

Applicant(s)

SUITA ET AL.

Examiner

Jorge O. Peche

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3661

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☒ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date See Continuation Sheet.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :04/22/2004, 05/10/2006, 11/06/2006.

DETAILED ACTION

Claim Objections

1. Claim 4 is objected to because of the following informalities: Claim 4 has a limitation over an apparatus invention, which depend on claims 1 and 2. Claims 1 and 2 are process invention. Appropriate correction is required. The Examiner is treating claim 4 as a depended on claim 3.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-7 are rejected under 35 U.S.C. 102(e) as being anticipated by **Sutherland et al. (Patent No.: US 7,155,316 B2).**

Regarding claim 1-2, Sutherland discloses a microsurgical robot process comprising the step of:

- Defining virtual no-go boundaries and a trajectory of an end effector tool (26) in a workstation-recording device, computer (21) (see column 2, lines 66- column 3, lines 11; column 5, lines 21-37; column 6, lines 54-62; column 9, lines 41-48;

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column 11, lines 56-column 12, lines 3; column 16, lines 45-column 17, lines 11; Figures 1, 12-17).

- Defining a robot system with two movable arms each carried on a wheeled base with each arm having a six of degrees of freedom of movement, an end effector which can be rolled about its axis and an actuator which can slide along the axis for operating different tools (at least two three-dimensional spatial regions) (see abstract, column 5, lines 35-37; Figures 2-3, 7, and 10).
- As the surgical simulation software on the workstation allows the surgeon to plan the point of cranial trepanation (a set of point, a set of lines or an envelope sphere), calculate safe trajectories for the surgical corridor, and define the virtual no-go boundaries, it would be inherent for the microsurgical robot system to match the predicted position of the two movable arm (three-dimensional spatial) with the virtual no-go boundaries to prevent inadvertent injury to patient neural system (see column 6, lines 54-61, column 9, lines 40-48). Therefore, under this process, it would also be inherent that the computer (21) in workstation (11) and the controller (12) would coordinate a stop process/mechanism to terminate any rotation and/or position change in the robot joint and/or link to compel the virtual no-go boundaries.

Regarding **claims 3-4**, Sutherland discloses a microsurgical robot system comprising:

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- A workstation (11) for defining no-go boundaries and a trajectory of the end effector tool (26) in a workstation-recordable device, computer (21) (see column 2, lines 66- column 3, lines 11; column 5, lines 21-37; column 6, lines 54-62; column 9, lines 41-48; column 11, lines 56-column 12, lines 3; column 16, lines 45-column 17, lines 11; Figures 1, 12-17).
- A robot manipulator (10) and controller (12) for defining a robot system with two movable arms each carried on a wheeled base with each arm having a six of degrees of freedom of movement, an end effector which can be rolled about its axis and an actuator which can slide along the axis for operating different tools (at least two three-dimensional spatial regions) (see abstract, column 11, lines 56-column 12, lines 10; column 12, lines 54-column 13, lines 5; column 5, lines 35-37; Figures 1-3, 7, and 10).
- As the surgical simulation software on the workstation (11) allows the surgeon to plan the point of cranial trepanation (a set of point, a set of lines or an envelope sphere), calculate safe trajectories (predicted position) for the surgical corridor, and define the virtual no-go boundaries, it would be inherent for the microsurgical robot system to match the predicted position of the two movable arm (three-dimensional spatial) with the virtual no-go boundaries to prevent inadvertent injury to patient neural system (see column 6, lines 54-61, column 9, lines 40-48). Therefore, under this process, it would also be inherent that the computer (21) in workstation (11) and the controller (12) would coordinate a stop

process/mechanism to terminate any rotation and/or position change in the robot joint and/or link to compel the virtual no-go boundaries.

Regarding **claims 5-6**, Sutherland discloses a microsurgical robot system having a controller device (12) to limit movement of one or both robot arms, and a workstation (11) for defining no-go boundaries and a trajectory of the end effector tool (26) in a workstation-recordable device, computer (21) (see abstract; column 2, lines 66- column 3, lines 11; column 5, lines 21-37; column 6, lines 54-62; column 9, lines 41-48; column 11, lines 56-column 12, lines 8; column 13, lines 16-28; column 16, lines 45-column 17, lines 11; Figures 1, 12-17).

Regarding **claim 7**, Sutherland discloses a microsurgical robot process comprising the step of:

- Receiving the end effector tool (26) trajectory signal from workstation and hand-controller as the surgeon plans the point of cranial trepanation (see column 5, lines 6-34; column 6, lines 54-62; column 16, lines 45-column 17, lines 10; Figures 1 and 12-17).
- Calculating safe trajectories (boundary value) for the surgical corridor, and define the virtual no-go boundaries (see column 6, lines 54-62; column 9, lines 41-48).
- As the surgeon plans the point of cranial trepanation, calculate safe trajectories for surgical corridor, and define the virtual no-go boundary, it would be inherent for the microsurgical robot system to determine whether any one of calculated safe trajectories are within the correspond boundary value (see column 2, lines 66- column 3, lines 11; column 5, lines 21-37; column 6, lines 54-62; column 9,

lines 41-48; column 11, lines 56-column 12, lines 3; column 16, lines 45-column 17, lines 11; Figures 1, 12-17). Under this process, it would also be inherent that the computer (21) in workstation (11) and the controller (12) would coordinate a stop process/mechanism to terminate any rotation and/or position change in the robot joint and/or link to compel the virtual no-go boundaries.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jorge O. Peche whose telephone number is 571-270-1339. The examiner can normally be reached on 8:30 am - 5:30 pm Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas G. Black can be reached on 571-272-6956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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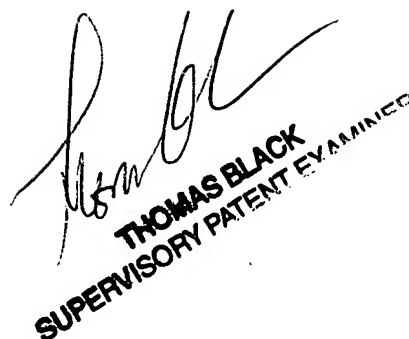
A handwritten signature in black ink, appearing to read "Jorge Peche". The signature is fluid and cursive, with a large initial "J" and "P".

Jorge O. Peche

Patent Examiner

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May 28, 2007

A handwritten signature in black ink, appearing to read "Thomas Black". The signature is fluid and cursive, with a large initial "T" and "B".
THOMAS BLACK
SUPERVISORY PATENT EXAMINER